

DRICE - Office Action

Claims:

1. (AMENDED) A **dynamically re-configurable** internal combustion engine coupled to operation of a vehicle comprising:
 - one or more cylinder units each with expanding and contracting cylinder volume and associated stroke sequences;
 - each cylinder unit having an intake port and an electronically controllable intake valve component having multiple states under computer control;
 - each cylinder unit having an exhaust port and an electronically controllable exhaust valve component having multiple states under computer control;
 - each cylinder unit having an electronic fuel injector component having multiple states under computer control;
 - each cylinder unit having an air-fuel mixture ignition means for igniting an air-fuel mixture in the cylinder volume, said ignition means under computer control;
 - each cylinder unit having a programmable software logic switch for selecting a first stroke sequence for combusting a compressed air-fuel mixture for a power stroke and for selecting a second stroke sequence for expelling compressed air for alternate use, said switching means under computer control;
 - a computer usable medium; and
 - a computer control system comprising computer readable program logic embodied in the computer usable medium for controlling the steps of selecting component states to provide alterable cylinder unit stroke sequences.
2. (AMENDED) A dynamically re-configurable internal combustion engine as in claim 1 further comprising programmable computer means for starting, transitioning and controlling individual cylinder units for selected modes of operation, wherein a mode is comprised of a sequence of piston strokes in concert with associated cylinder unit component states, said modes selected from, ~~but not limited to~~; power mode, boost power mode, regenerative compression brake mode, compression brake mode, compressed air start mode and compressed air idle mode.

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Claims 3-11 are unchanged.

3. A dynamically re-configurable internal combustion engine as in claim 1 further comprising a program logic computer alterable engine cylinder unit firing order.
4. A dynamically re-configurable internal combustion engine as in claim 1 further comprising a cylinder unit power mode wherein execution of program logic controls cylinder unit component states in accordance with program logic defining the states sequentially set in concert with the cylinder unit piston position to create an intake, compression, power and exhaust stroke sequence.
5. A dynamically re-configurable internal combustion engine as in claim 1 further comprising a compressed air storage reservoir charged by one or more cylinder units having an associated valve component allowing compressed air to flow from a cylinder unit to the compressed air storage and an associated valve component having multiple states under computer control for metering compressed air from the compressed air storage reservoir to a cylinder unit.
6. A dynamically re-configurable internal combustion engine as in claim 5 further comprising electronically controllable compressed air injection quantity and electronically controllable fuel injection quantity for a computer programmably selectable air-fuel composition in cylinder unit.
7. A dynamically re-configurable internal combustion engine as in claim 5 further comprising engine compressed air start mode for initiating engine crankshaft rotation through admission of compressed air into volume expanding cylinder units in accordance with compressed air start mode logic and computer program logic execution responsive to engine speed and crankshaft position.
8. A dynamically re-configurable internal combustion engine as in claim 5 further comprising engine re-regenerative compression brake mode wherein a computer controls cylinder unit component states to sequence the cylinder unit to drawn air, compress the air using crankshaft to